

AMERICAN KENNEL CLUB

NAME

KATES KUDLIN TREASA

NUMBER

TS55046202



990000007867257

BREED

HAVANESE

SEX

FEMALE

COLOR

GOLD, WHITE MARKINGS

DATE OF BIRTH

MARCH 7, 2022

SIRE

M BEACHY'S HUNTER

TS26986101 09-16 (AKC DNA #V768478)

DAM

MIZZ SCARLET

TS28605804 06-17

BREEDER

DAVID ALLEN MILLER

OWNER

DAVID ALLEN MILLER

2990 TOWNSHIP ROAD 166

SUGARCREEK OH 44681-9603



AMERICAN KENNEL CLUB®

CERTIFICATE ISSUED  
AUGUST 15, 2022

*This certificate invalidates all previous certificates issued.*

If a date appears after the name and number of the sire and dam, it indicates the issue of the Stud Book Register in which the sire or dam is published.

**For Transfer Instructions, see back of Certificate.**

*This Certificate issued with the right to correct or revoke by the American Kennel Club.*

REGISTRATION CERTIFICATE

## TRAITS: COAT COLOR

<b>TRAIT</b>	<b>RESULT</b>
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### E Locus (MC1R)

The E Locus determines if and where a dog can produce dark (black or brown) hair. Dogs with two copies of the recessive **e** variant do not produce dark hairs and will express a red pigment called pheomelanin over their entire body. The shade of red, which can range from a deep copper to white, depends on other genetic factors, including the Intensity loci. In addition to determining if a dog can develop dark hairs, the E Locus can give a dog a black "mask" or "widow's peak" unless the dog has overriding coat color genetic factors.

**No dark mask or grizzle (EE)**

Dogs with one or two copies of the **E<sup>m</sup>** variant may have a melanistic mask (dark facial hair as commonly seen in the German Shepherd Dog and Pug). In the absence of **E<sup>m</sup>**, dogs with the **E<sup>g</sup>** variant can have a "grizzle" phenotype (darker color on the head and top with a melanistic "widow's peak" and a lighter underside, commonly seen in the Afghan Hound and Borzoi and also referred to as "domino"). In the absence of both **E<sup>m</sup>** and **E** variants, dogs with the **E<sup>a</sup>** or **E<sup>h</sup>** variants can express the grizzle phenotype. Additionally, a dog with any combination of two of the **E<sup>g</sup>**, **E<sup>a</sup>**, or **E<sup>h</sup>** variants (example: **E<sup>g</sup>E<sup>a</sup>**) is also expected to express the grizzle phenotype.

### K Locus (CBD103)

The K Locus **K<sup>B</sup>** allele "overrides" the A Locus, meaning that it prevents the A Locus genotype from affecting coat color. For this reason, the **K<sup>B</sup>** allele is referred to as the "dominant black" allele. As a result, dogs with at least one **K<sup>B</sup>** allele will usually have solid black or brown coats (or red/cream coats if they are **ee** at the E Locus) regardless of their genotype at the A Locus, although several other genes could impact the dog's coat and cause other patterns, such as white spotting. Dogs with the **k<sup>y</sup>k<sup>y</sup>** genotype will show a coat color pattern based on the genotype they have at the A Locus. Dogs who test as **K<sup>B</sup>k<sup>y</sup>** may be brindle rather than black or brown.

**More likely to have a patterned haircoat (k<sup>y</sup>k<sup>y</sup>)**

## TRAITS: COAT COLOR (CONTINUED)

<b>TRAIT</b>	<b>RESULT</b>
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### Intensity Loci

Areas of a dog's coat where dark (black or brown) pigment is not expressed either contain red/yellow pigment, or no pigment at all. Five locations across five chromosomes explain approximately 70% of red pigmentation "intensity" variation across all dogs. Dogs with a result of **Intense Red Pigmentation** will likely have deep red hair like an Irish Setter or "apricot" hair like some Poodles, dogs with a result of **Intermediate Red Pigmentation** will likely have tan or yellow hair like a Soft-Coated Wheaten Terrier, and dogs with **Dilute Red Pigmentation** will likely have cream or white hair like a Samoyed. Because the mutations we test may not directly cause differences in red pigmentation intensity, we consider this to be a linkage test.

**Any light hair likely white or cream (Dilute Red Pigmentation)**

### A Locus (ASIP)

The A Locus controls switching between black and red pigment in hair cells, but it will only be expressed in dogs that are not **ee** at the E Locus and are **k<sup>Y</sup>k<sup>Y</sup>** at the K Locus. Sable (also called "Fawn") dogs have a mostly or entirely red coat with some interspersed black hairs. Agouti (also called "Wolf Sable") dogs have red hairs with black tips, mostly on their head and back. Black and tan dogs are mostly black or brown with lighter patches on their cheeks, eyebrows, chest, and legs. Recessive black dogs have solid-colored black or brown coats.

**Fawn Sable coat color pattern (a<sup>Y</sup>a<sup>t</sup>)**

### D Locus (MLPH)

The D locus result that we report is determined by three different genetic variants that can work together to cause diluted pigmentation. These are the common **d** allele, also known as "**d1**", and the less common alleles known as "**d2**" and "**d3**". Dogs with two **d** alleles, regardless of which variant, will have all black pigment lightened ("diluted") to gray, or brown pigment lightened to lighter brown in their hair, skin, and sometimes eyes. There are many breed-specific names for these dilute colors, such as "blue", "charcoal", "fawn", "silver", and "Isabella". Note that in certain breeds, dilute dogs have a higher incidence of Color Dilution Alopecia. Dogs with one **d** allele will not be dilute, but can pass the **d** allele on to their puppies.

**Dark areas of hair and skin are not lightened (DD)**

## TRAITS: COAT COLOR (CONTINUED)

TRAIT	RESULT
<b>Cocoa (HPS3)</b>  Dogs with the <b>coco</b> genotype will produce dark brown pigment instead of black in both their hair and skin. Dogs with the <b>Nco</b> genotype will produce black pigment, but can pass the <b>co</b> allele on to their puppies. Dogs that have the <b>coco</b> genotype as well as the <b>bb</b> genotype at the B locus are generally a lighter brown than dogs that have the <b>Bb</b> or <b>BB</b> genotypes at the B locus.	<b>No co alleles, not expressed (NN)</b>
<b>B Locus (TYRP1)</b>  Dogs with two copies of the <b>b</b> allele produce brown pigment instead of black in both their hair and skin. Dogs with one copy of the <b>b</b> allele will produce black pigment, but can pass the <b>b</b> allele on to their puppies. E Locus <b>ee</b> dogs that carry two <b>b</b> alleles will have red or cream coats, but have brown noses, eye rims, and footpads (sometimes referred to as "Dudley Nose" in Labrador Retrievers). "Liver" or "chocolate" is the preferred color term for brown in most breeds; in the Doberman Pinscher it is referred to as "red".	<b>Black or gray hair and skin (BB)</b>
<b>Saddle Tan (RALY)</b>  The "Saddle Tan" pattern causes the black hairs to recede into a "saddle" shape on the back, leaving a tan face, legs, and belly, as a dog ages. The Saddle Tan pattern is characteristic of breeds like the Corgi, Beagle, and German Shepherd. Dogs that have the <b>ll</b> genotype at this locus are more likely to be mostly black with tan points on the eyebrows, muzzle, and legs as commonly seen in the Doberman Pinscher and the Rottweiler. This gene modifies the A Locus <b>a<sup>t</sup></b> allele, so dogs that do not express <b>a<sup>t</sup></b> are not influenced by this gene.	<b>Not expressed (NI)</b>
<b>S Locus (MITF)</b>  The S Locus determines white spotting and pigment distribution. MITF controls where pigment is produced, and an insertion in the MITF gene causes a loss of pigment in the coat and skin, resulting in white hair and/or pink skin. Dogs with two copies of this variant will likely have breed-dependent white patterning, with a nearly white, parti, or piebald coat. Dogs with one copy of this variant will have more limited white spotting and may be considered flash, parti or piebald. This MITF variant does not explain all white spotting patterns in dogs and other variants are currently being researched. Some dogs may have small amounts of white on the paws, chest, face, or tail regardless of their S Locus genotype.	<b>Likely solid colored, but may have small amounts of white (Ssp)</b>

## TRAITS: COAT COLOR (CONTINUED)

<b>TRAIT</b>	<b>RESULT</b>
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### M Locus (PMEL)

Merle coat patterning is common to several dog breeds including the Australian Shepherd, Catahoula Leopard Dog, and Shetland Sheepdog, among many others. Merle arises from an unstable SINE insertion (which we term the "M\*" allele) that disrupts activity of the pigmentary gene PMEL, leading to mottled or patchy coat color. Dogs with an **M\*m** result are likely to be phenotypically merle or could be "non-expressing" merle, meaning that the merle pattern is very subtle or not at all evident in their coat. Dogs with an **M\*M\*** result are likely to be phenotypically merle or double merle. Dogs with an **mm** result have no merle alleles and are unlikely to have a merle coat pattern.

**No merle alleles (mm)**

Note that Embark does not currently distinguish between the recently described cryptic, atypical, atypical+, classic, and harlequin merle alleles. Our merle test only detects the presence, but not the length of the SINE insertion. We do not recommend making breeding decisions on this result alone. Please pursue further testing for allelic distinction prior to breeding decisions.

### R Locus (USH2A)

The R Locus regulates the presence or absence of the roan coat color pattern. Partial duplication of the USH2A gene is strongly associated with this coat pattern. Dogs with at least one **R** allele will likely have roaning on otherwise uniformly unpigmented white areas. Roan appears in white areas controlled by the S Locus but not in other white or cream areas created by other loci, such as the E Locus with **ee** along with Dilute Red Pigmentation by I Locus (for example, in Samoyeds). Mechanisms for controlling the extent of roaning are currently unknown, and roaning can appear in a uniform or non-uniform pattern. Further, non-uniform roaning may appear as ticked, and not obviously roan. The roan pattern can appear with or without ticking.

**Likely no impact on coat pattern (rr)**

### H Locus (Harlequin)

This pattern is recognized in Great Danes and causes dogs to have a white coat with patches of darker pigment. A dog with an **Hh** result will be harlequin if they are also **M\*m** or **M\*M\*** at the M Locus and are not **ee** at the E locus. Dogs with a result of **hh** will not be harlequin. This trait is thought to be homozygous lethal; a living dog with an **HH** genotype has never been found.

**No harlequin alleles (hh)**

## TRAITS: COAT COLOR (CONTINUED)

TRAIT	RESULT
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### Panda White Spotting

Panda White Spotting originated in a line of German Shepherd Dogs and causes a mostly symmetrical white spotting of the head and/or body. This is a dominant variant of the KIT gene, which has a role in pigmentation.

Dogs with one copy of the I allele will exhibit this white spotting. Dogs with two copies of the I allele have never been observed, as two copies of the variant is suspected to be lethal to the developing embryo. Dogs with the **NN** result will not exhibit white spotting due to this variant.

**Not expected to display Panda pattern (NN)**

# KATE'S KUDLIN TREASA



DNA Test Report

Test Date: July 21st, 2025

embk.me/teresa12

## BREED-RELEVANT RESULTS

Research studies indicate that these results are more relevant to dogs like KATE'S KUDLIN TREASA, and may influence her chances of developing certain health conditions.

Intervertebral Disc Disease (Type I) (FGF4 retrogene - CFA12) Clear



















Registration: American Kennel Club (AKC)



TS55046202

## OTHER RESULTS



















Research has not yet linked these conditions to dogs with similar breeds to KATE'S KUDLIN TREASA. Review any increased risk or notable results to understand her potential risk and recommendations.

 ALT Activity (GPT)	Notable
 2-DHA Kidney & Bladder Stones (APRT)	Clear
 Acral Mutilation Syndrome (GDNF-AS, Spaniel and Pointer Variant)	Clear
 Alaskan Husky Encephalopathy (SLC19A3)	Clear
 Alaskan Malamute Polyneuropathy, AMPN (NDRG1 SNP)	Clear
 Alexander Disease (GFAP)	Clear
 Anhidrotic Ectodermal Dysplasia (EDA Intron 8)	Clear
 Autosomal Dominant Progressive Retinal Atrophy (RHO)	Clear
 Bald Thigh Syndrome (IGFBP5)	Clear
 Bernard-Soulier Syndrome, BSS (GP9, Cocker Spaniel Variant)	Clear
 Bully Whippet Syndrome (MSTN)	Clear
 Canine Elliptocytosis (SPTB Exon 30)	Clear
 Canine Fucosidosis (FUCA1)	Clear
 Canine Leukocyte Adhesion Deficiency Type I, CLAD I (ITGB2, Setter Variant)	Clear
 Canine Leukocyte Adhesion Deficiency Type III, CLAD III (FERMT3, German Shepherd Variant)	Clear
 Canine Multifocal Retinopathy, cmr1 (BEST1 Exon 2)	Clear
 Canine Multifocal Retinopathy, cmr2 (BEST1 Exon 5, Coton de Tulear Variant)	Clear
 Canine Multifocal Retinopathy, cmr3 (BEST1 Exon 10 Deletion, Finnish and Swedish Lapphund, Lapponian Herder Variant)	Clear



















## OTHER RESULTS

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|--|-------|
| <input checked="" type="checkbox"/> Canine Multiple System Degeneration (SERAC1 Exon 4, Chinese Crested Variant)               | Clear |
| <input checked="" type="checkbox"/> Canine Multiple System Degeneration (SERAC1 Exon 15, Kerry Blue Terrier Variant)           | Clear |
| <input checked="" type="checkbox"/> Cardiomyopathy and Juvenile Mortality (YARS2)  | Clear |
| <input checked="" type="checkbox"/> Centronuclear Myopathy, CNM (PTPLA)  | Clear |
| <input checked="" type="checkbox"/> Cerebellar Hypoplasia (VLDLR, Eurasier Variant)  | Clear |
| <input checked="" type="checkbox"/> Chondrodysplasia (ITGA10, Norwegian Elkhound and Karelian Bear Dog Variant)                | Clear |
| <input checked="" type="checkbox"/> Cleft Lip and/or Cleft Palate (ADAMTS20, Nova Scotia Duck Tolling Retriever Variant)       | Clear |
| <input checked="" type="checkbox"/> Cleft Palate, CP1 (DLX6 intron 2, Nova Scotia Duck Tolling Retriever Variant)              | Clear |
| <input checked="" type="checkbox"/> Cobalamin Malabsorption (CUBN Exon 8, Beagle Variant)                                      | Clear |
| <input checked="" type="checkbox"/> Cobalamin Malabsorption (CUBN Exon 53, Border Collie Variant)                              | Clear |
| <input checked="" type="checkbox"/> Collie Eye Anomaly (NHEJ1)   | Clear |
| <input checked="" type="checkbox"/> Complement 3 Deficiency, C3 Deficiency (C3)  | Clear |
| <input checked="" type="checkbox"/> Congenital Cornification Disorder (NSDHL, Chihuahua Variant)                               | Clear |
| <input checked="" type="checkbox"/> Congenital Dyserythropoietic Anemia and Polymyopathy (EHPB1L1, Labrador Retriever Variant) | Clear |
| <input checked="" type="checkbox"/> Congenital Hypothyroidism (TPO, Rat, Toy, Hairless Terrier Variant)                        | Clear |
| <input checked="" type="checkbox"/> Congenital Hypothyroidism (TPO, Tenterfield Terrier Variant)                               | Clear |
| <input checked="" type="checkbox"/> Congenital Hypothyroidism with Goiter (TPO Intron 13, French Bulldog Variant)              | Clear |
| <input checked="" type="checkbox"/> Congenital Hypothyroidism with Goiter (SLC5A5, Shih Tzu Variant)                           | Clear |

## OTHER RESULTS

 Congenital Macrothrombocytopenia (TUBB1 Exon 1, Cairn and Norfolk Terrier Variant)	Clear
 Congenital Muscular Dystrophy (LAMA2, Italian Greyhound)	Clear
 Congenital Myasthenic Syndrome, CMS (COLQ, Labrador Retriever Variant)	Clear
 Congenital Myasthenic Syndrome, CMS (COLQ, Golden Retriever Variant)	Clear
 Congenital Myasthenic Syndrome, CMS (CHAT, Old Danish Pointing Dog Variant)	Clear
 Congenital Myasthenic Syndrome, CMS (CHRNE, Jack Russell Terrier Variant)	Clear
 Congenital Stationary Night Blindness (LRIT3, Beagle Variant)	Clear
 Congenital Stationary Night Blindness (RPE65, Briard Variant)	Clear
 Copper Toxicosis (Accumulating) (ATP7B)	Clear
 Copper Toxicosis (Attenuating) (ATP7A, Labrador Retriever)	Clear
 Copper Toxicosis (Attenuating) (RETN, Labrador Retriever)	Clear
 Craniomandibular Osteopathy, CMO (SLC37A2)	Clear
 Craniomandibular Osteopathy, CMO (SLC37A2 Intron 16, Basset Hound Variant)	Clear
 Cystinuria Type I-A (SLC3A1, Newfoundland Variant)	Clear
 Cystinuria Type II-A (SLC3A1, Australian Cattle Dog Variant)	Clear
 Cystinuria Type II-B (SLC7A9, Miniature Pinscher Variant)	Clear
 Darier Disease (ATP2A2, Irish Terrier Variant)	Clear
 Day Blindness (CNGB3 Deletion, Alaskan Malamute Variant)	Clear

## OTHER RESULTS

 Day Blindness (CNGA3 Exon 7, German Shepherd Variant)	Clear
 Day Blindness (CNGA3 Exon 7, Labrador Retriever Variant)	Clear
 Day Blindness (CNGB3 Exon 6, German Shorthaired Pointer Variant)	Clear
 Deafness and Vestibular Syndrome of Dobermans, DVDob, DINGS (MYO7A)	Clear
 Degenerative Myelopathy, DM (SOD1A)	Clear
 Demyelinating Polyneuropathy (SBF2/MTRM13)	Clear
 Dental-Skeletal-Retinal Anomaly (MIA3, Cane Corso Variant)	Clear
 Diffuse Cystic Renal Dysplasia and Hepatic Fibrosis (INPP5E Intron 9, Norwich Terrier Variant)	Clear
 Dilated Cardiomyopathy, DCM (RBM20, Schnauzer Variant)	Clear
 Dilated Cardiomyopathy, DCM1 (PDK4, Doberman Pinscher Variant 1)	Clear
 Dilated Cardiomyopathy, DCM2 (TTN, Doberman Pinscher Variant 2)	Clear
 Disproportionate Dwarfism (PRKG2, Dogo Argentino Variant)	Clear
 Dry Eye Curly Coat Syndrome (FAM83H Exon 5)	Clear
 Dystrophic Epidermolysis Bullosa (COL7A1, Central Asian Shepherd Dog Variant)	Clear
 Dystrophic Epidermolysis Bullosa (COL7A1, Golden Retriever Variant)	Clear
 Early Bilateral Deafness (LOXHD1 Exon 38, Rottweiler Variant)	Clear
 Early Onset Adult Deafness, EOAD (EPS8L2 Deletion, Rhodesian Ridgeback Variant)	Clear
 Early Onset Cerebellar Ataxia (SEL1L, Finnish Hound Variant)	Clear

## OTHER RESULTS

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|---|-------|
| <input checked="" type="checkbox"/> Ehlers Danlos (ADAMTS2, Doberman Pinscher Variant)  | Clear |
| <input checked="" type="checkbox"/> Ehlers-Danlos Syndrome (EDS) (COL5A1, Labrador Retriever Variant)                             | Clear |
| <input checked="" type="checkbox"/> Enamel Hypoplasia (ENAM Deletion, Italian Greyhound Variant)                                  | Clear |
| <input checked="" type="checkbox"/> Enamel Hypoplasia (ENAM SNP, Parson Russell Terrier Variant)                                  | Clear |
| <input checked="" type="checkbox"/> Episodic Falling Syndrome (BCAN)  | Clear |
| <input checked="" type="checkbox"/> Exercise-Induced Collapse, EIC (DNM1)   | Clear |
| <input checked="" type="checkbox"/> Factor VII Deficiency (F7 Exon 5)   | Clear |
| <input checked="" type="checkbox"/> Factor XI Deficiency (F11 Exon 7, Kerry Blue Terrier Variant)                                 | Clear |
| <input checked="" type="checkbox"/> Familial Nephropathy (COL4A4 Exon 3, Cocker Spaniel Variant)                                  | Clear |
| <input checked="" type="checkbox"/> Familial Nephropathy (COL4A4 Exon 30, English Springer Spaniel Variant)                       | Clear |
| <input checked="" type="checkbox"/> Fanconi Syndrome (FAN1, Basenji Variant)  | Clear |
| <input checked="" type="checkbox"/> Fetal-Onset Neonatal Neuroaxonal Dystrophy (MFN2, Giant Schnauzer Variant)                    | Clear |
| <input checked="" type="checkbox"/> Glanzmann's Thrombasthenia Type I (ITGA2B Exon 13, Great Pyrenees Variant)                    | Clear |
| <input checked="" type="checkbox"/> Glanzmann's Thrombasthenia Type I (ITGA2B Exon 12, Otterhound Variant)                        | Clear |
| <input checked="" type="checkbox"/> Globoid Cell Leukodystrophy, Krabbe disease (GALC Exon 5, Terrier Variant)                    | Clear |
| <input checked="" type="checkbox"/> Glycogen Storage Disease Type IA, Von Gierke Disease, GSD IA (G6PC1, German Pinscher Variant) | Clear |
| <input checked="" type="checkbox"/> Glycogen Storage Disease Type IA, Von Gierke Disease, GSD IA (G6PC, Maltese Variant)          | Clear |
| <input checked="" type="checkbox"/> Glycogen Storage Disease Type IIIA, GSD IIIA (AGL, Curly Coated Retriever Variant)            | Clear |

## OTHER RESULTS

<input checked="" type="checkbox"/> Glycogen storage disease Type VII, Phosphofructokinase Deficiency, PFK Deficiency (PFKM, Whippet and English Springer Spaniel Variant)	Clear
<input checked="" type="checkbox"/> Glycogen storage disease Type VII, Phosphofructokinase Deficiency, PFK Deficiency (PFKM, Wachtelhund Variant)	Clear
<input checked="" type="checkbox"/> GM1 Gangliosidosis (GLB1 Exon 2, Portuguese Water Dog Variant)	Clear
<input checked="" type="checkbox"/> GM1 Gangliosidosis (GLB1 Exon 15, Shiba Inu Variant)	Clear
<input checked="" type="checkbox"/> GM1 Gangliosidosis (GLB1 Exon 15, Alaskan Husky Variant)	Clear
<input checked="" type="checkbox"/> GM2 Gangliosidosis (HEXA, Japanese Chin Variant)	Clear
<input checked="" type="checkbox"/> GM2 Gangliosidosis (HEXB, Poodle Variant)	Clear
<input checked="" type="checkbox"/> Golden Retriever Progressive Retinal Atrophy 1, GR-PRA1 (SLC4A3)	Clear
<input checked="" type="checkbox"/> Golden Retriever Progressive Retinal Atrophy 2, GR-PRA2 (TTC8)	Clear
<input checked="" type="checkbox"/> Goniodysgenesis and Glaucoma, Pectinate Ligament Dysplasia, PLD (OLFM3)	Clear
<input checked="" type="checkbox"/> Hemophilia A (F8 Exon 11, German Shepherd Variant 1)	Clear
<input checked="" type="checkbox"/> Hemophilia A (F8 Exon 1, German Shepherd Variant 2)	Clear
<input checked="" type="checkbox"/> Hemophilia A (F8 Exon 10, Boxer Variant)	Clear
<input checked="" type="checkbox"/> Hemophilia B (F9 Exon 7, Terrier Variant)	Clear
<input checked="" type="checkbox"/> Hemophilia B (F9 Exon 7, Rhodesian Ridgeback Variant)	Clear
<input checked="" type="checkbox"/> Hereditary Ataxia (PNPLA8, Australian Shepherd Variant)	Clear
<input checked="" type="checkbox"/> Hereditary Ataxia, Cerebellar Degeneration (RAB24, Old English Sheepdog and Gordon Setter Variant)	Clear
<input checked="" type="checkbox"/> Hereditary Cataracts (HSF4 Exon 9, Australian Shepherd Variant)	Clear



















## OTHER RESULTS

<input checked="" type="checkbox"/> Hereditary Cataracts (FYCO1, Wirehaired Pointing Griffon Variant)	Clear
<input checked="" type="checkbox"/> Hereditary Cerebellar Ataxia (SELENOP, Belgian Shepherd Variant)	Clear
<input checked="" type="checkbox"/> Hereditary Footpad Hyperkeratosis (FAM83G, Terrier and Kromfohrlander Variant)	Clear
<input checked="" type="checkbox"/> Hereditary Footpad Hyperkeratosis (DSG1, Rottweiler Variant)	Clear
<input checked="" type="checkbox"/> Hereditary Nasal Parakeratosis (SUV39H2 Intron 4, Greyhound Variant)	Clear
<input checked="" type="checkbox"/> Hereditary Nasal Parakeratosis, HNPk (SUV39H2)	Clear
<input checked="" type="checkbox"/> Hereditary Vitamin D-Resistant Rickets (VDR)	Clear
<input checked="" type="checkbox"/> Hypocatalasia, Acatlasemia (CAT)	Clear
<input checked="" type="checkbox"/> Hypomyelination and Tremors (FNIP2, Weimaraner Variant)	Clear
<input checked="" type="checkbox"/> Hypophosphatasia (ALPL Exon 9, Karelian Bear Dog Variant)	Clear
<input checked="" type="checkbox"/> Ichthyosis (NIPAL4, American Bulldog Variant)	Clear
<input checked="" type="checkbox"/> Ichthyosis (ASPRV1 Exon 2, German Shepherd Variant)	Clear
<input checked="" type="checkbox"/> Ichthyosis (SLC27A4, Great Dane Variant)	Clear
<input checked="" type="checkbox"/> Ichthyosis, Epidermolytic Hyperkeratosis (KRT10, Terrier Variant)	Clear
<input checked="" type="checkbox"/> Ichthyosis, ICH1 (PNPLA1, Golden Retriever Variant)	Clear
<input checked="" type="checkbox"/> Ichthyosis, ICH2 (ABHD5, Golden Retriever Variant)	Clear
<input checked="" type="checkbox"/> Inflammatory Myopathy (SLC25A12)	Clear
<input checked="" type="checkbox"/> Inherited Myopathy of Great Danes (BIN1)	Clear

## OTHER RESULTS

<input checked="" type="checkbox"/> Inherited Selected Cobalamin Malabsorption with Proteinuria (CUBN, Komondor Variant)	Clear
<input checked="" type="checkbox"/> Intestinal Lipid Malabsorption (ACSL5, Australian Kelpie)	Clear
<input checked="" type="checkbox"/> Junctional Epidermolysis Bullosa (LAMA3 Exon 66, Australian Cattle Dog Variant)	Clear
<input checked="" type="checkbox"/> Junctional Epidermolysis Bullosa (LAMB3 Exon 11, Australian Shepherd Variant)	Clear
<input checked="" type="checkbox"/> Juvenile Epilepsy (LGI2)	Clear
<input checked="" type="checkbox"/> Juvenile Laryngeal Paralysis and Polyneuropathy (RAB3GAP1, Rottweiler Variant)	Clear
<input checked="" type="checkbox"/> Juvenile Myoclonic Epilepsy (DIRAS1)	Clear
<input checked="" type="checkbox"/> L-2-Hydroxyglutaricaciduria, L2HGA (L2HGDH, Staffordshire Bull Terrier Variant)	Clear
<input checked="" type="checkbox"/> Lagotto Storage Disease (ATG4D)	Clear
<input checked="" type="checkbox"/> Laryngeal Paralysis (RAPGEF6, Miniature Bull Terrier Variant)	Clear
<input checked="" type="checkbox"/> Laryngeal Paralysis and Polyneuropathy (CNTNAP1, Leonberger, Saint Bernard, and Labrador Retriever variant)	Clear
<input checked="" type="checkbox"/> Late Onset Spinocerebellar Ataxia (CAPN1)	Clear
<input checked="" type="checkbox"/> Late-Onset Neuronal Ceroid Lipofuscinosis, NCL 12 (ATP13A2, Australian Cattle Dog Variant)	Clear
<input checked="" type="checkbox"/> Leonberger Polyneuropathy 1 (LPN1, ARHGEF10)	Clear
<input checked="" type="checkbox"/> Leonberger Polyneuropathy 2 (GJA9)	Clear
<input checked="" type="checkbox"/> Lethal Acrodermatitis, LAD (MKLN1)	Clear
<input checked="" type="checkbox"/> Leukodystrophy (TSEN54 Exon 5, Standard Schnauzer Variant)	Clear
<input checked="" type="checkbox"/> Ligneous Membranitis, LM (PLG)	Clear



















## OTHER RESULTS

 Limb Girdle Muscular Dystrophy (SGCD, Boston Terrier Variant)	Clear
 Limb-Girdle Muscular Dystrophy 2D (SGCA Exon 3, Miniature Dachshund Variant)	Clear
 Long QT Syndrome (KCNQ1)	Clear
 Lunde hund Syndrome (LEPREL1)	Clear
 Macular Corneal Dystrophy, MCD (CHST6)	Clear
 Malignant Hyperthermia (RYR1)	Clear
 May-Hegglin Anomaly (MYH9)	Clear
 MDR1 Drug Sensitivity (ABCB1)	Clear
 Medium-Chain Acyl-CoA Dehydrogenase Deficiency, MCADD (ACADM, Cavalier King Charles Spaniel Variant)	Clear
 Methemoglobinemia (CYB5R3, Pit Bull Terrier Variant)	Clear
 Methemoglobinemia (CYB5R3)	Clear
 Microphthalmia (RBP4 Exon 2, Soft Coated Wheaten Terrier Variant)	Clear
 Mucopolysaccharidosis IIIB, Sanfilippo Syndrome Type B, MPS IIIB (NAGLU, Schipperke Variant)	Clear
 Mucopolysaccharidosis Type IIIA, Sanfilippo Syndrome Type A, MPS IIIA (SGSH Exon 6, Dachshund Variant)	Clear
 Mucopolysaccharidosis Type IIIA, Sanfilippo Syndrome Type A, MPS IIIA (SGSH Exon 6, New Zealand Huntaway Variant)	Clear
 Mucopolysaccharidosis Type VI, Maroteaux-Lamy Syndrome, MPS VI (ARSB Exon 5, Miniature Pinscher Variant)	Clear
 Mucopolysaccharidosis Type VII, Sly Syndrome, MPS VII (GUSB Exon 3, German Shepherd Variant)	Clear
 Mucopolysaccharidosis Type VII, Sly Syndrome, MPS VII (GUSB Exon 5, Terrier Brasileiro Variant)	Clear



















## OTHER RESULTS

<input checked="" type="checkbox"/> Muscular Dystrophy (DMD, Cavalier King Charles Spaniel Variant 1)	Clear
<input checked="" type="checkbox"/> Muscular Dystrophy (DMD, Golden Retriever Variant)	Clear
<input checked="" type="checkbox"/> Muscular Dystrophy-Dystroglycanopathy (LARGE1, Labrador Retriever Variant)	Clear
<input checked="" type="checkbox"/> Musladin-Lueke Syndrome, MLS (ADAMTSL2)	Clear
<input checked="" type="checkbox"/> Myasthenia Gravis-Like Syndrome (CHRNE, Heideterrier Variant)	Clear
<input checked="" type="checkbox"/> Myotonia Congenita (CLCN1 Exon 23, Australian Cattle Dog Variant)	Clear
<input checked="" type="checkbox"/> Myotonia Congenita (CLCN1 Exon 19, Labrador Retriever Variant)	Clear
<input checked="" type="checkbox"/> Myotonia Congenita (CLCN1 Exon 7, Miniature Schnauzer Variant)	Clear
<input checked="" type="checkbox"/> Narcolepsy (HCRTR2 Exon 1, Dachshund Variant)	Clear
<input checked="" type="checkbox"/> Narcolepsy (HCRTR2 Intron 4, Doberman Pinscher Variant)	Clear
<input checked="" type="checkbox"/> Narcolepsy (HCRTR2 Intron 6, Labrador Retriever Variant)	Clear
<input checked="" type="checkbox"/> Nemaline Myopathy (NEB, American Bulldog Variant)	Clear
<input checked="" type="checkbox"/> Neonatal Cerebellar Cortical Degeneration (SPTBN2, Beagle Variant)	Clear
<input checked="" type="checkbox"/> Neonatal Encephalopathy with Seizures, NEWS (ATF2)	Clear
<input checked="" type="checkbox"/> Neonatal Interstitial Lung Disease (LAMP3)	Clear
<input checked="" type="checkbox"/> Neuroaxonal Dystrophy, NAD (VPS11, Rottweiler Variant)	Clear
<input checked="" type="checkbox"/> Neuroaxonal Dystrophy, NAD (TECPR2, Spanish Water Dog Variant)	Clear
<input checked="" type="checkbox"/> Neuronal Ceroid Lipofuscinosis 1, NCL 1 (PPT1 Exon 8, Dachshund Variant 1)	Clear



















## OTHER RESULTS

 Neuronal Ceroid Lipofuscinosis 10, NCL 10 (CTSD Exon 5, American Bulldog Variant)	Clear
 Neuronal Ceroid Lipofuscinosis 2, NCL 2 (TPP1 Exon 4, Dachshund Variant 2)	Clear
 Neuronal Ceroid Lipofuscinosis 5, NCL 5 (CLN5 Exon 4 SNP, Border Collie Variant)	Clear
 Neuronal Ceroid Lipofuscinosis 5, NCL 5 (CLN5 Exon 4 Deletion, Golden Retriever Variant)	Clear
 Neuronal Ceroid Lipofuscinosis 6, NCL 6 (CLN6 Exon 7, Australian Shepherd Variant)	Clear
 Neuronal Ceroid Lipofuscinosis 7, NCL 7 (MFSD8, Chihuahua and Chinese Crested Variant)	Clear
 Neuronal Ceroid Lipofuscinosis 8, NCL 8 (CLN8, Australian Shepherd Variant)	Clear
 Neuronal Ceroid Lipofuscinosis 8, NCL 8 (CLN8 Exon 2, English Setter Variant)	Clear
 Neuronal Ceroid Lipofuscinosis 8, NCL 8 (CLN8 Insertion, Saluki Variant)	Clear
 Neuronal Ceroid Lipofuscinosis, Cerebellar Ataxia, NCL4A (ARSG Exon 2, American Staffordshire Terrier Variant)	Clear
 Oculocutaneous Albinism, OCA (SLC45A2 Exon 6, Bullmastiff Variant)	Clear
 Oculocutaneous Albinism, OCA (SLC45A2, Small Breed Variant)	Clear
 Oculoskeletal Dysplasia 2 (COL9A2, Samoyed Variant)	Clear
 Osteochondrodysplasia (SLC13A1, Poodle Variant)	Clear
 Osteogenesis Imperfecta (COL1A2, Beagle Variant)	Clear
 Osteogenesis Imperfecta (SERPINH1, Dachshund Variant)	Clear
 Osteogenesis Imperfecta (COL1A1, Golden Retriever Variant)	Clear
 P2Y12 Receptor Platelet Disorder (P2Y12)	Clear



















## OTHER RESULTS

 Pachyonychia Congenita (KRT16, Dogue de Bordeaux Variant)	Clear
 Paroxysmal Dyskinesia, PxD (PIGN)	Clear
 Persistent Mullerian Duct Syndrome, PMDS (AMHR2)	Clear
 Pituitary Dwarfism (POU1F1 Intron 4, Karelian Bear Dog Variant)	Clear
 Platelet Factor X Receptor Deficiency, Scott Syndrome (TMEM16F)	Clear
 Polycystic Kidney Disease, PKD (PKD1)	Clear
 Pompe's Disease (GAA, Finnish and Swedish Lapphund, Lapponian Herder Variant)	Clear
 Prekallikrein Deficiency (KLKB1 Exon 8)	Clear
 Primary Ciliary Dyskinesia, PCD (NME5, Alaskan Malamute Variant)	Clear
 Primary Ciliary Dyskinesia, PCD (STK36, Australian Shepherd Variant)	Clear
 Primary Ciliary Dyskinesia, PCD (CCDC39 Exon 3, Old English Sheepdog Variant)	Clear
 Primary Hyperoxaluria (AGXT)	Clear
 Primary Lens Luxation (ADAMTS17)	Clear
 Primary Open Angle Glaucoma (ADAMTS17 Exon 11, Basset Fauve de Bretagne Variant)	Clear
 Primary Open Angle Glaucoma (ADAMTS10 Exon 17, Beagle Variant)	Clear
 Primary Open Angle Glaucoma (ADAMTS10 Exon 9, Norwegian Elkhound Variant)	Clear
 Primary Open Angle Glaucoma and Primary Lens Luxation (ADAMTS17 Exon 2, Chinese Shar-Pei Variant)	Clear
 Progressive Retinal Atrophy (SAG)	Clear

## OTHER RESULTS

 Progressive Retinal Atrophy (IFT122 Exon 26, Lapponian Herder Variant)	Clear
 Progressive Retinal Atrophy 5, PRA5 (NECAP1 Exon 6, Giant Schnauzer Variant)	Clear
 Progressive Retinal Atrophy, Bardet-Biedl Syndrome (BBS2 Exon 11, Shetland Sheepdog Variant)	Clear
 Progressive Retinal Atrophy, CNGA (CNGA1 Exon 9)	Clear
 Progressive Retinal Atrophy, crd1 (PDE6B, American Staffordshire Terrier Variant)	Clear
 Progressive Retinal Atrophy, crd4/cord1 (RPGRIP1)	Clear
 Progressive Retinal Atrophy, PRA1 (CNGB1)	Clear
 Progressive Retinal Atrophy, PRA3 (FAM161A)	Clear
 Progressive Retinal Atrophy, prcd (PRCD Exon 1)	Clear
 Progressive Retinal Atrophy, rcd1 (PDE6B Exon 21, Irish Setter Variant)	Clear
 Progressive Retinal Atrophy, rcd3 (PDE6A)	Clear
 Proportionate Dwarfism (GH1 Exon 5, Chihuahua Variant)	Clear
 Protein Losing Nephropathy, PLN (NPHS1)	Clear
 Pyruvate Dehydrogenase Deficiency (PDP1, Spaniel Variant)	Clear
 Pyruvate Kinase Deficiency (PKLR Exon 5, Basenji Variant)	Clear
 Pyruvate Kinase Deficiency (PKLR Exon 7, Beagle Variant)	Clear
 Pyruvate Kinase Deficiency (PKLR Exon 10, Terrier Variant)	Clear
 Pyruvate Kinase Deficiency (PKLR Exon 7, Labrador Retriever Variant)	Clear

## OTHER RESULTS

 Pyruvate Kinase Deficiency (PKLR Exon 7, Pug Variant)	Clear
 Raine Syndrome (FAM20C)	Clear
 Recurrent Inflammatory Pulmonary Disease, RIPD (AKNA, Rough Collie Variant)	Clear
 Renal Cystadenocarcinoma and Nodular Dermatofibrosis (FLCN Exon 7)	Clear
 Retina Dysplasia and/or Optic Nerve Hypoplasia (SIX6 Exon 1, Golden Retriever Variant)	Clear
 Sensory Neuropathy (FAM134B, Border Collie Variant)	Clear
 Severe Combined Immunodeficiency, SCID (PRKDC, Terrier Variant)	Clear
 Severe Combined Immunodeficiency, SCID (RAG1, Wetterhoun Variant)	Clear
 Shaking Puppy Syndrome (PLP1, English Springer Spaniel Variant)	Clear
 Shar-Pei Autoinflammatory Disease, SPAID, Shar-Pei Fever (MTBP)	Clear
 Skeletal Dysplasia 2, SD2 (COL11A2, Labrador Retriever Variant)	Clear
 Skin Fragility Syndrome (PKP1, Chesapeake Bay Retriever Variant)	Clear
 Spinocerebellar Ataxia (SCN8A, Alpine Dachsbracke Variant)	Clear
 Spinocerebellar Ataxia with Myokymia and/or Seizures (KCNJ10)	Clear
 Spongy Degeneration with Cerebellar Ataxia 1 (KCNJ10)	Clear
 Spongy Degeneration with Cerebellar Ataxia 2 (ATP1B2)	Clear
 Stargardt Disease (ABCA4 Exon 28, Labrador Retriever Variant)	Clear
 Succinic Semialdehyde Dehydrogenase Deficiency (ALDH5A1 Exon 7, Saluki Variant)	Clear

## OTHER RESULTS

<input checked="" type="checkbox"/> Thrombopathia (RASGRP1 Exon 5, American Eskimo Dog Variant)	Clear
<input checked="" type="checkbox"/> Thrombopathia (RASGRP1 Exon 5, Basset Hound Variant)	Clear
<input checked="" type="checkbox"/> Thrombopathia (RASGRP1 Exon 8, Landseer Variant)	Clear
<input checked="" type="checkbox"/> Trapped Neutrophil Syndrome, TNS (VPS13B)	Clear
<input checked="" type="checkbox"/> Ullrich-like Congenital Muscular Dystrophy (COL6A3 Exon 10, Labrador Retriever Variant)	Clear
<input checked="" type="checkbox"/> Ullrich-like Congenital Muscular Dystrophy (COL6A1 Exon 3, Landseer Variant)	Clear
<input checked="" type="checkbox"/> Unilateral Deafness and Vestibular Syndrome (PTPRQ Exon 39, Doberman Pinscher)	Clear
<input checked="" type="checkbox"/> Urate Kidney & Bladder Stones (SLC2A9)	Clear
<input checked="" type="checkbox"/> Von Willebrand Disease Type I, Type I vWD (VWF)	Clear
<input checked="" type="checkbox"/> Von Willebrand Disease Type II, Type II vWD (VWF, Pointer Variant)	Clear
<input checked="" type="checkbox"/> Von Willebrand Disease Type III, Type III vWD (VWF Exon 4, Terrier Variant)	Clear
<input checked="" type="checkbox"/> Von Willebrand Disease Type III, Type III vWD (VWF Intron 16, Nederlandse Kooikerhondje Variant)	Clear
<input checked="" type="checkbox"/> Von Willebrand Disease Type III, Type III vWD (VWF Exon 7, Shetland Sheepdog Variant)	Clear
<input checked="" type="checkbox"/> X-Linked Hereditary Nephropathy, XLHN (COL4A5 Exon 35, Samoyed Variant 2)	Clear
<input checked="" type="checkbox"/> X-Linked Myotubular Myopathy (MTM1, Labrador Retriever Variant)	Clear
<input checked="" type="checkbox"/> X-Linked Progressive Retinal Atrophy 1, XL-PRA1 (RPGR)	Clear
<input checked="" type="checkbox"/> X-linked Severe Combined Immunodeficiency, X-SCID (IL2RG Exon 1, Basset Hound Variant)	Clear
<input checked="" type="checkbox"/> X-linked Severe Combined Immunodeficiency, X-SCID (IL2RG, Corgi Variant)	Clear

# KATE'S KUDLIN TREASA



DNA Test Report

Test Date: July 21st, 2025

embk.me/teresa12

## OTHER RESULTS

Xanthine Urolithiasis (XDH, Mixed Breed Variant) Clear

$\beta$ -Mannosidosis (MANBA Exon 16, Mixed-Breed Variant) Clear

Mast Cell Tumor No result

Registration: American Kennel Club (AKC)



TS55046202

## HEALTH REPORT

### Notable result

#### ALT Activity

KATE'S KUDLIN TREASA inherited one copy of the variant we tested for Alanine Aminotransferase Activity

#### Why is this important to your vet?

KATE'S KUDLIN TREASA has one copy of a variant associated with reduced ALT activity as measured on veterinary blood chemistry panels. Please inform your veterinarian that KATE'S KUDLIN TREASA has this genotype, as ALT is often used as an indicator of liver health and KATE'S KUDLIN TREASA is likely to have a lower than average resting ALT activity. As such, an increase in KATE'S KUDLIN TREASA's ALT activity could be evidence of liver damage, even if it is within normal limits by standard ALT reference ranges.

#### What is Alanine Aminotransferase Activity?

Alanine aminotransferase (ALT) is a clinical tool that can be used by veterinarians to better monitor liver health. This result is not associated with liver disease. ALT is one of several values veterinarians measure on routine blood work to evaluate the liver. It is a naturally occurring enzyme located in liver cells that helps break down protein. When the liver is damaged or inflamed, ALT is released into the bloodstream.

#### How vets diagnose this condition

Genetic testing is the only way to provide your veterinarian with this clinical tool.

#### How this condition is treated

Veterinarians may recommend blood work to establish a baseline ALT value for healthy dogs with one or two copies of this variant.

## INBREEDING AND DIVERSITY

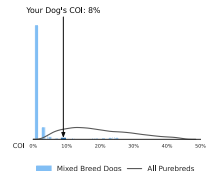
### CATEGORY

### RESULT

#### Coefficient Of Inbreeding

Our genetic COI measures the proportion of your dog's genome where the genes on the mother's side are identical by descent to those on the father's side.

8%

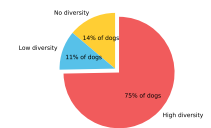


#### MHC Class II - DLA DRB1

A Dog Leukocyte Antigen (DLA) gene, DRB1 encodes a major histocompatibility complex (MHC) protein involved in the immune response. Some studies have shown associations between certain DRB1 haplotypes and autoimmune diseases such as Addison's disease (hypoadrenocorticism) in certain dog breeds, but these findings have yet to be scientifically validated.

#### High Diversity

How common is this amount of diversity in mixed breed dogs:



#### MHC Class II - DLA DQA1 and DQB1

DQA1 and DQB1 are two tightly linked DLA genes that code for MHC proteins involved in the immune response. A number of studies have shown correlations of DQA-DQB1 haplotypes and certain autoimmune diseases; however, these have not yet been scientifically validated.

#### High Diversity

How common is this amount of diversity in mixed breed dogs:

